

## Progress Report No. 11



<b>Project Name</b>	Lane City Reservoir Project
<b>TWDB Contract</b>	1400011761
<b>Reporting Period</b>	May 1, 2017 to August 31, 2017 (TWDB 4Q2017)
<b>From:</b>	John S. McLeod, P.E., Project Manager
<b>To</b>	Matthew Webb/TWDB
<b>Date:</b>	November 21, 2017

### Summary

**Overview:** There was good construction progress during the reporting period but the arrival of Hurricane Harvey at the end of August reversed some of these gains. Total rainfall recorded during the reporting period was 32.17 inches, 22.89 inches from Hurricane Harvey. There were 12 days with rainfall greater than 0.5 inches.

The areas most affected by the hurricane were the relift pump station and the 120-inch inlet/out pipe. The embankment was not significantly damaged but damage to the emergency spillway was extensive. The contractor and engineer are now in the early stages of damage assessment but it is apparent that extensive repairs will be required in some areas. Harvey's effect on the completion schedule is not precisely known but project completion is expected to be delayed. The LCRA and contractor agreed that Hurricane Harvey was a Force Majeure event.

The embankment is now estimated to be over 88% complete. During the reporting period the contractor placed approximately 1.1 million cubic yards of soil to complete over 4.6 miles of the 5.2 mile embankment structure. The contractor has completed over 800,000 ft. of the chimney drain and placed over 132 miles of the planned 220 miles of soil-cement.

At the relift area, the contractor completed the concrete encasement of the large-diameter main reservoir feeder pipe – a 10-foot-diameter welded steel pipe with concrete lining. Rainfall from Harvey flooded this area and extensive silt removal and dewatering will be required before work can restart.

As of the end of August, the project was about 66 percent complete based on contract expenditures and about 64 percent complete based on the contract time.

**Grant Items:** Construction of grant reimbursable items (river outfall, wave wall, and chimney drain) all continued to progress but were affected by Hurricane Harvey. A summary of work completed during the period is presented below:

- **River Outfall.** Work in this area was significantly affected by the hurricane. High water levels have again delayed work in the river but contractor was able to complete some work at the canal outlet structure. During the reporting period contractor completed wall construction and installation of two new over-shot control gates. Note: The term "River Outfall" is also synonymously termed "River Return System" in the TWDB Contract.

- Wave Wall. Fabrication and delivery of the wave wall segments continued during the period. With embankment construction nearly complete, contractor is now planning to start installation of wave wall segment. The contractor has set up a test area to demonstrate the installation and anchoring of the wave wall segments. Wave wall installation is expected to begin in October 2017.
- Chimney Drain. Contractor completed construction of all chimney drain except for the short 2,000 ft. closure section at the relief pump station area. Contractor completed over 239,000 linear feet of chimney drain during the reporting period and is now approximately 96% complete.

Payment Request: None. All grant eligible work has been completed. Reference TWDB Quarterly Report No. 10.

## 1. Work Completed During the Quarter

Table 1 summarizes work activities and accomplishments made during the reporting period. Note: The “(P)” indicates a photograph of the item is presented at the end of the report.

**Table 1  
Summary of Work Completed During Reporting Period**

Scope Item	Description
<b>Task 1 - Regulatory Considerations</b>	<ul style="list-style-type: none"> <li>• None. Task is complete</li> </ul>
<b>Task 2 - Construction</b>	<ul style="list-style-type: none"> <li>• <u>River Outfall</u> <ul style="list-style-type: none"> <li>○ Completed wall structure for canal outlet. (P)</li> <li>○ Installed 2 over-shot Rubicon control gates.(P)</li> <li>○ Installed permanent sheetpile for stilling basing.(P)</li> </ul> </li> <li>• <u>Chimney Drain/Embankment</u> <ul style="list-style-type: none"> <li>○ Installed approximately 239,000 lineal feet (l-f) of chimney drain filter during the period.(P)</li> </ul> </li> <li>• <u>Wave Wall</u> <ul style="list-style-type: none"> <li>○ Contractor completed test section for installation of wave walls.</li> <li>○ Contractor expects to start wave wall installation in October 2017.</li> </ul> </li> </ul>
<b>Task 3 - Post Construction Documentation and Lessons Learned</b>	<ul style="list-style-type: none"> <li>• <u>Report</u> <ul style="list-style-type: none"> <li>○ Continued to collect and catalog construction photographs of construction means and methods.</li> <li>○ Updated the table of contents and began work to identify report graphics and tables.</li> </ul> </li> </ul>
<b>Task 4 - Outreach and Public Communication</b>	<ul style="list-style-type: none"> <li>• No activities during the reporting period.</li> </ul>

## 2. Work Planned for Next Quarter

Table 2 summarizes work activities planned for the next quarter.

**Table 2**  
**Summary Work Planned for Next Quarter**

Scope Item	Work Planned
<b>Task 1 - Regulatory Considerations</b>	<ul style="list-style-type: none"> <li>None. Task is complete</li> </ul>
<b>Task 2 - Construction</b>	<ul style="list-style-type: none"> <li><u>River Outfall</u> <ul style="list-style-type: none"> <li>Complete construction of canal outfall structure.</li> <li>Begin installation of river outfall pipe.</li> </ul> </li> <li><u>Chimney Drain</u> <ul style="list-style-type: none"> <li>Complete chimney drain construction</li> </ul> </li> <li><u>Wave Wall</u> <ul style="list-style-type: none"> <li>Begin installation of wall segments.</li> </ul> </li> </ul>
<b>Task 3 - Post Construction Documentation and Lessons Learned</b>	<ul style="list-style-type: none"> <li>Continue collection and cataloging construction photographs of construction means and methods.</li> <li>Issue draft of table of contents, list of figures and tables for TWDB review and comment.</li> </ul>
<b>Task 4 - Outreach and Public Communication</b>	<ul style="list-style-type: none"> <li>Continue to explore other opportunities for public outreach.</li> </ul>

## 3. Budget Status

LCRA received final payment from the Texas Water Development Board (TWDB) for the project grant. A summary of the budgeted vs. actual expenditures for the 3 areas of work is presented in Table 3.

**Table 3**  
**Summary of Budget and Expenditures**

Item	Budget		Expenditures			Remaining TWDB Contribution
	Total Construction <sup>1</sup>	TWDB Contribution <sup>5</sup>	Construction Paid to Date <sup>2</sup>	Total TWDB Contribution To Date <sup>3</sup>	% of TWDB Budget	
River Outfall	\$3,979,976.00	\$559,595.90	\$1,779,319.23	\$559,595.90	100%	\$0.00
Chimney Drain <sup>4</sup>	\$5,052,170.00	\$1,316,968.41	\$4,187,498.92	\$1,316,968.41	100%	\$0.00
Wave Wall	\$3,848,167.00	\$534,867.69	\$1,755,533.87	\$534,867.69	100%	\$0.00
<b>Total</b>	<b>\$12,880,313.00</b>	<b>\$2,411,432.00</b>	<b>\$7,722,352.02</b>	<b>\$2,411,432.00</b>	<b>100%</b>	<b>\$0.00</b>

<sup>1</sup> Total construction budget is based on a construction contract with Phillips & Jordan (PJ) executed on Nov. 19, 2015. Construction budgets are based on contractor's baseline Schedule of Values.

<sup>2</sup> Total paid by LCRA to contractor for each Item.

<sup>3</sup> Includes current reimbursement request

<sup>4</sup> Contractor's estimated chimney drain cost component of embankment construction inception thru February 28, 2017.

<sup>5</sup> TWDB Contribution budget reallocated. See Table 5 for details.

A final summary of TWDB contributions to the 3 grant eligible items is presented in Table 4.

**Table 4**  
**TWDB Contribution Details**

Item	Total LCRA Expenditures During Period <sup>1</sup>	TWDB Contribution This Period <sup>2</sup>	TWDB Contribution Previous Periods	Total TWDB Contribution To Date <sup>3</sup>	TWDB Budget <sup>5</sup>	TWDB Remaining Contribution
River Outfall	\$0.00	\$0.00	\$559,595.90	\$559,595.90	\$559,595.90	\$0.00
Chimney Drain <sup>4</sup>	\$0.00	\$0.00	\$1,316,968.41	\$1,316,968.41	\$1,316,968.41	\$0.00
Wave Wall	\$1,014,376.87	\$301,773.82	\$233,093.87	\$534,867.69	\$534,867.69	\$0.00
<b>Total</b>	<b>\$1,014,376.87</b>	<b>\$301,773.82</b>	<b>\$2,109,658.18</b>	<b>\$2,411,432.00</b>	<b>\$2,411,432.00</b>	<b>\$0.00</b>

<sup>1</sup> LCRA actual expenditures to contractor during the period of Mar-Apr 2017. Note: LCRA expenditures for River Outfall and Chimney Drain not shown.  
<sup>2</sup> Restricted to remaining TWDB Contribution per an effective rate of 29.7496% of Total LCRA Expenditures.  
<sup>3</sup> Includes current reimbursement request  
<sup>4</sup> Contractor's estimated chimney drain cost component of embankment construction inception thru February 28, 2017.  
<sup>5</sup> TWDB Budget reallocated. See Table 5 for details.

Table 5 presents the allocation of grant budgets. There were no reallocations during the reporting period.

**Table 5**  
**Reallocation of TWDB Contribution Budget**

Item	Original Budget	Reallocated Budget	Change	Change as % of Original
River Outfall	\$723,430.00	\$559,595.90	-\$163,834.10	-23%
Chimney Drain <sup>4</sup>	\$1,085,144.00	\$1,316,968.41	\$231,824.41	21%
Wave Wall	\$602,858.00	\$534,867.69	-\$67,990.31	-11%
<b>Total</b>	<b>\$2,411,432.00</b>	<b>\$2,411,432.00</b>	<b>\$0.00</b>	<b>0%</b>

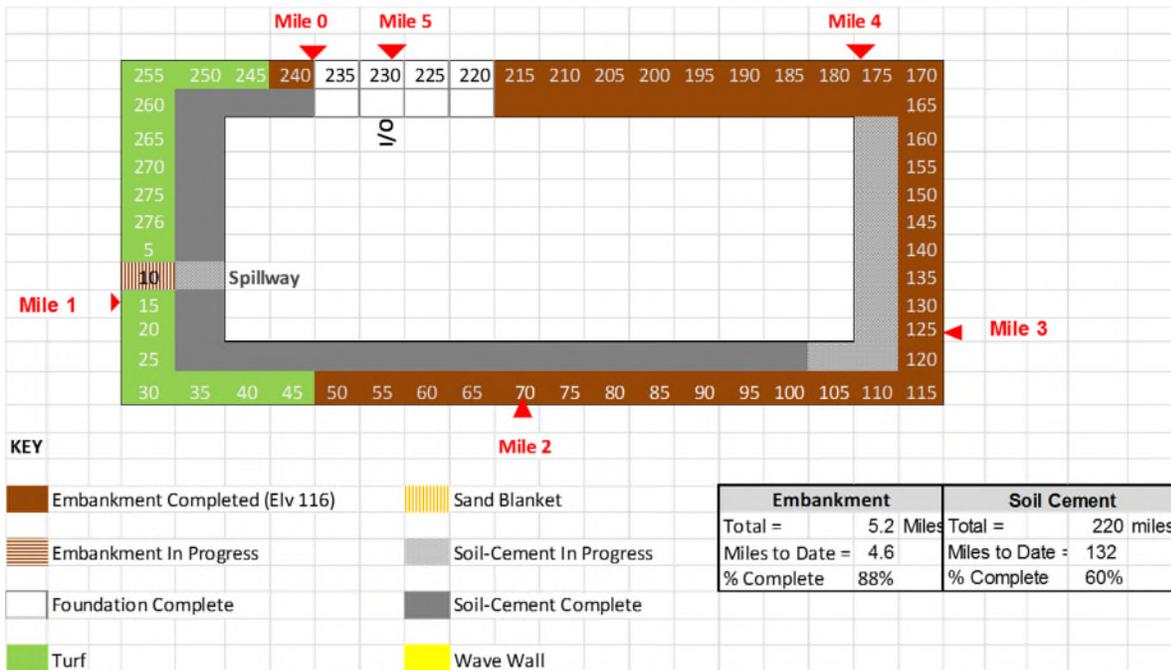
#### 4. Construction Status and Project Schedule

The status of Lane City Reservoir construction as of August 31, 2017 is summarized in Table 6 below. Percentages are for overall construction completion.

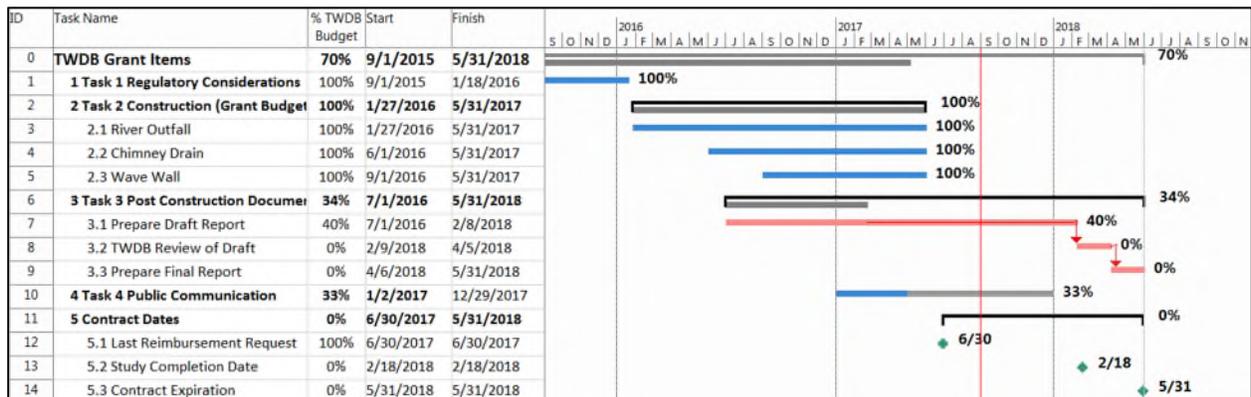
**Table 6**  
**Construction Status**

Component	% Complete	Comments
<b>Overall Project</b>	64%	The project is currently 64% complete based on the pre-Harvey Substantial completion date of Sept. 8, 2018. This date is expected to change. A new date will be reported in the next quarterly report.
<b>River Outfall</b>	42%	Work progress in this facility remains slow. Contractor was able to install control gates at the outlet canal structure but continues to have problems with riverside construction.

Component	% Complete	Comments
<b>Chimney Drain &amp; Embankment</b>	88%	Overall embankment construction is approximately 88% complete with a short 2,000 section at the inlet/out area remaining. A graphical summary of embankment completion is shown in the figure below.
<b>Wave Wall</b>	69%	To date approximately 2,898 wall segments are now housed onsite. Contractor now estimates approximately 400 segments remain to be delivered. Contractor has prepared a test area to develop the means and methods for installation.



An overview of the grant schedule is shown in the figure below. It shows the reimbursement schedule for the river outfall, chimney drain, and wave wall components; delivery of the Task 3 Construction Report, and Task 4 Public Communication tasks.



## Local Participation

Table 7 summarizes the local expenditures by the general contractor. Local expenditures account for approximately 15.3% of total expenditures for the construction component of the Lane City Reservoir Project.

**Table 7**  
**Local Participation Status through August 2017**

<u>Local Subcontracts by County</u>	<u>Totals</u>
• Wharton	\$ 796,034
• Matagorda	\$ 1,302,120
• Colorado	\$ 7,945,726
Local Subcontracts	\$ 10,043,880
Local Labor (all counties)	\$8,686,928
<b>Total Local Expenditures</b>	<b>\$ 18,730,808</b>
<b>Total Contractor Expenditures</b>	<b>\$122,317,829</b>
% Local Participation	15.3%
Goal	15%

## 5. Risks and Concerns

The Hurricane Harvey event will delay completion of the project. To what extent is not know at this time. This project delay is not expected to affect completion of the TWDB report.

## 7. Photographs

Crews drive sheet pile and start excavation for the new river outfall structure. The structure is designed to return water from the reservoir back into the Colorado River while minimizing any erosion.

2017.07.18



Crews construct the connection between the supply canal and the new river outfall structure. This is the canal return structure.

2017.05



Crews complete installation of the flow gates between the irrigation canal and the future river outfall.

2017.08



New over-shot control gate installed in river outfall structure.

2017.08



Construction crews place the final topsoil on a portion of completed embankment. The bottom left of the picture shows grass seeding that workers placed on the completed topsoil.

2017.07



Crews install the inlet/outlet structure large diameter welded steel pipe

2017.05



Crews construct the large-diameter reservoir inlet/outlet pipe. Workers will place a total of about 572 feet of 10-foot-diameter pipe and then will encase it with concrete. Encasement started in May. 2017.06



Workers encase the 120-inch-diameter main reservoir inlet/outlet pipe in reinforced concrete. 2017.07



**Pre-Harvey  
view of  
construction in  
the relift area.  
Note competed  
encasement of  
the 120-in  
inlet/outlet  
pipe.**

**2017.08.15**



**A similar view  
of the same  
area after  
Hurricane  
Harvey and  
shows the relift  
pump station  
area under  
more than 40  
feet of water.**

**2017.0 8.31**



Crews worked the night shift to place soil cement around the inside surface of the reservoir because cooler night temps improves the concrete quality.

2017.05

